<u>Claims</u>

What is claimed:

1.   A system for producing an actuator response, the system comprising

a plurality of rows of actuators capable of producing an actuator response in

5   reply to an control signal;

a resistive strip connected to the plurality of rows of actuators; and

a first electrode having a first voltage connected to the resistive strip and a

second electrode having a second voltage connected to the resistive strip for transmitting

the control signal to the rows of actuators to thereby cause the rows of actuators to

10   produce the actuator response.

2.   The system of claim 1, wherein the plurality of rows of actuators produce the

actuator response that depends on a locally computed value of a function of the control

signal.

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3.   The system of claim 1, wherein the length of the resistive strip is substantially

equal to a correlation length in which each row in the plurality of rows is correlated to

every other row in the plurality of rows.

20   4.   The system of claim 3, wherein the first electrode is connected to a first end of

the resistive strip, and the second electrode is connected to a second end of the resistive

strip.

5.   The system of claim 4, wherein the first voltage has a value V_1 and the second voltage has a value V_2 such that $(V_1 + V_2)/2$ is chosen to approximate a desired actuation profile.

6.   The system of claim 5, wherein $(V_1 + V_2)/2$ is chosen to substantially equal an average value of the desired actuation profile over a position substantially equal to a location of the resistive strip.

7.   The system of claim 1, wherein the first voltage has a value V_1 and the second voltage has a value V_2 such that $(V_1 - V_2)$ is chosen to approximate a desired actuation profile.

8.   The system of claim 7, wherein $(V_1 - V_2)$ is chosen to substantially equal an average slope of the desired actuation profile over a position substantially equal to a location of the resistive strip.

9.   A system for producing an actuator response, the system comprising
          a plurality of rows of actuators capable of producing an actuator response in reply to a control signal;
          a resistive strip connected to the plurality of rows of actuators; and
          N electrodes, where N is an integer greater than one, having a voltage $V_1, ..., V_N$, each electrode being connected to the resistive strip to transmit the control signal to the rows of actuators to thereby cause the rows of actuators to produce the actuator response.

10. The system of claim 9, such that the distance between any two adjacent electrodes is substantially equal to a correlation length of the plurality of rows of actuators.

5   11. The system of claim 9, wherein $(V_j + V_{j+1})/2$, for each j satisfying $1 \leq j \leq N\text{-}1$, is chosen to approximate a desired actuation profile.

12. The system of claim 11, wherein $(V_j + V_{j+1})/2$ is chosen to substantially equal an average value of the desired actuation profile over a position substantially equal to a
10 location of the portion of the resistive strip between the jth and jth + 1 electrodes.

13. The system of claim 9, wherein $(V_j - V_{j+1})$, for each j satisfying $1 \leq j \leq N\text{-}1$, is chosen to approximate a desired actuation profile voltage.

15 14. The system of claim 13, wherein $(V_j - V_{j+1})$ is chosen to substantially equal an average slope of the desired actuation profile over a position substantially equal to a location of the portion of the resistive strip between the jth and jth + 1 electrodes.

15. The system of claim 9, wherein each of the plurality of rows of actuators can
20 produce two discrete actuator responses.

16. The system of claim 9, wherein a particular one of the N electrodes is allowed to float, thereby increasing a correlation region.

25 17. A system for producing an actuator response, the system comprising

a resistive sheet;

an array of actuators electrically connected to said resistive sheets via contacts; and

a plurality of electrodes for fixing voltages on the resistive sheet, wherein by

5   varying the voltages a desired actuation profile can be produced by the array of actuators

to produce the actuator response.

18.   The system of claim 17, wherein the plurality of electrodes includes at least four

electrodes for fixing voltages, $V_1, \ldots, V_4$ on the resistive sheet, wherein by varying the

10   voltages $V_1, \ldots, V_4$ a desired actuation profile can be produced by the array of actuators

to produce the actuator response.

19.   The system of claim 18, wherein, if the four voltages lie substantially at points

$(0,0)$, $(1,0)$, $(0,1)$ and $(1,1)$ of a Cartesian coordinate system, the desired actuation .

15   profile, expressed as voltage $V(x,y)$ as a function of position within a square having

corners at said points, is given substantially by

$$V(x,y) = V_3 (1-x)(1-y) + V_1 (1-x)y + V_4 x(1-y) + V_2 xy.$$

20   20.   The system of claim 17, further comprising a capacitive layer coupled to the

resistive sheet to allow a correlation region to depend on time.

21.   A method for producing an actuator response, the method comprising

electrically connecting a plurality of rows of actuators to a resistive strip, said

25   actuators capable of producing an actuator response in reply to a control signal;

applying a first voltage to the resistive strip via a first electrode; and

applying a second voltage to the resistive strip via a second electrode, wherein the application of said first voltage and said second voltage provides the control signal that causes the actuators to produce the actuator response.

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22.   The method of claim 21, wherein, in the step of electrically connecting, the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows.

10   23.   The method of claim 21, wherein, in the step of applying a first voltage and applying a second voltage, the first voltage has a value V_1 and the second voltage has a value V_2 such that $(V_1 + V_2)/2$ is chosen to approximate a desired actuation profile.

24.   The method of claim 23, wherein, in the step of applying a first voltage and applying a second voltage, $(V_1 + V_2)/2$ is chosen to substantially equal an average value
15   of the desired actuation profile over a position substantially equal to a location of the resistive strip.

25.   The method of claim 21, wherein, in the step of applying a first voltage and
20   applying a second voltage, the first voltage has a value V_1 and the second voltage has a value V_2 such that $(V_1 - V_2)$ is chosen to approximate a desired actuation profile.

26.   The method of claim 25, wherein, in the step of applying a first voltage and applying a second voltage, $(V_1 - V_2)$ is chosen to substantially equal an average slope of

the desired actuation profile over a position substantially equal to a location of the

resistive strip.

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